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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,132

12/01/2003

Mitsuhiro Inazumi

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07/27/2007

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EXAMINER

PRENDERGAST, ROBERTA D

ART UNIT

PAPER NUMBER

2628

MAIL DATE

DELIVERY MODE

07/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/724,132	Applicant(s) INAZUMI, MITSUHIRO	
	Examiner Roberta Prendergast	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18, 19, 21, 22, 24, 25, 27, 28, 30, 31, 33, 34 and 36-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1,3,4,6,7,9,10,12,13,15,16,18,19,21,22,24,25,27,28,30,31,33,34 and 36-48.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

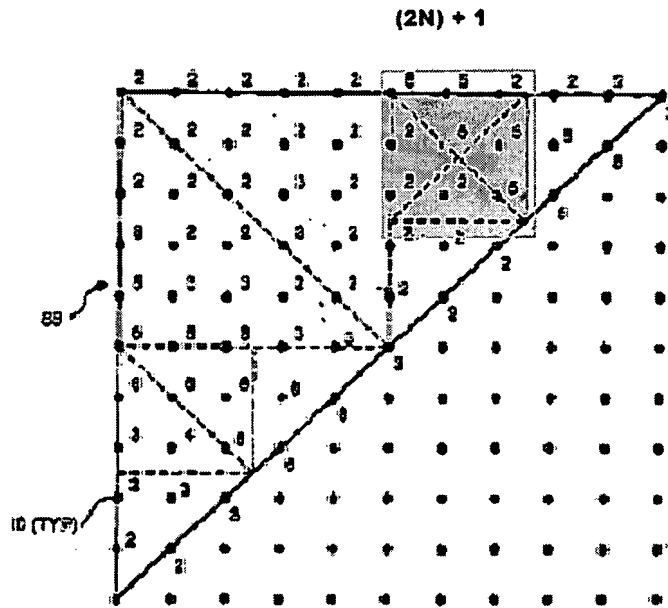
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16, 18, 19, 21, 22, 24, 25, 27, 28, 30, 31, 33, 34, and 36-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Bright U.S. Patent No. 6897977.

Referring to independent claims 1, 7, 13 and 19, Bright teaches a method and device (see Fig. 7 and columns 11-12, lines 63-34 for a system capable of performing the method as described in claims 1 and 7) for dividing an image to be processed into one or more square areas, dividing each square area into triangular areas, and coding the divided triangular area (Fig.1A (elements 10, 14 and 16)) comprising a step for inputting the image to be processed and storing the image (column 3, lines 7-10), a step of dividing the input image into one or more square areas having side lengths equal to $(2N) + 1$ pixels (where N is a natural number) (Figs.1A(element 10) and 4 (below); column 3, lines 13-14 i.e. the smaller squares have 3 pixels on a side and thus the number of pixels is $(2^1) + 1=3$), recurrently dividing each divided square area into

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triangular areas (Fig.1A(element 16); column 3, lines 16-17), a step of coding the divided triangular areas (Fig.1B(element 86), i.e. "code data"; column 3, lines 38-58) and a step for outputting the generated coded data (column 9, lines 31-45).

**FIG. 4**

Regarding claims 3, 9, 15 and 21, the rationale for claims 1, 7, 13 and 19 are incorporated herein, Bright teaches the method and device of claims 1, 7, 13 and 19 further including a storage device (column 12, lines 22-34) and a step for storing the type of shape of the triangular area (column 3, lines 2-6), a step of storing the pixel information of the vertexes and the hypotenuse midpoint of the triangular area (Fig.2 (elements 6 and 7); column 6, lines 44-54, column 7, lines 2-5), obtaining the pixel information of the hypotenuse midpoint of the triangular area (column 6, lines 37-47, i.e., starting at block 26 of Fig.1A, the pixel information of the hypotenuse midpoint, now

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is a new vertex of the newly created triangle, is obtained at block 28), updating the type of shape of the triangular area, pixel information of the vertexes and the hypotenuse midpoint of the triangular area (columns 6-7, lines 55-7).

Regarding claims 25, 27, 31 and 33, claims 25, 27, 31 and 33 are similar to claims 1, 3, 7 and 9, respectively, Bright further teaches a computer-readable medium encoded with a computer program product for performing the method as now claimed in claims 1, 3, 7 and 9 (columns 11-12, lines 67-8).

Regarding independent claims 4, 10, 16 and 22, Bright teaches a method and device (see Fig. 7 and columns 11-12, lines 63-34 for a system capable of performing the method as described in claims 4 and 10) for dividing each square area of an image which is divided into one or more square areas into triangular areas, and decoding the divided triangular area (Figs. 1A (elements 10, 14 and 16) and 6) comprising a step for inputting the coded image data (Fig. 6 (element 112)), a step for analyzing the input coded data (Fig. 6 (elements 114-122); column 11, lines 2-18), a step for recurrently combining triangular areas on the basis of the coded data and outputting the image data (column 11, lines 45-50, i.e., placing triangular areas together). It should be noticed that Bright fails to implicitly teach a step for combining a square area on the basis of combining triangular areas and reconstructing the image data from the combined square areas. However, Bright uses a decompressing technique comprising reversing the steps used in creating the compressed image data as discussed in above (column 11, lines 2-4). Furthermore, Bright teaches combining all the triangular areas (column 11, lines 45-4), wherein the number of pixels contained in one side of the square area

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generated in the dividing the input image being $(2^N) + 1$ (where N is a natural number) (see Figure 4 above, i.e. the smaller squares have 3 pixels on a side and thus the number of pixels is $(2^1) + 1=3$).

Regarding claims 6, 12, 18 and 24, the rationale for claims 4, 10, 16 and 22 are incorporated herein, Bright, as modified above, teaches the method and device of claims 4, 10, 16 and 22 further including a storage device (column 12, lines 22-34) and a step for storing the type of shape of the triangular area (column 3, lines 2-6), a step of storing the pixel information of the vertexes and the hypotenuse midpoint of the triangular area (column 3, lines 38-50), obtaining the pixel information of the hypotenuse midpoint of the triangular area (column 6, lines 37-47, i.e., starting at block 26 of Fig.1A, the pixel information of the hypotenuse midpoint, now is a new vertex of the newly created triangular, is obtained at block 28), updating the type of shape of the triangular area, pixel information of the vertexes and the hypotenuse midpoint of the triangular area (columns 6-7, lines 55-7).

Regarding claims 28, 30, 34 and 36, claims 28, 30, 34 and 36 are similar to claims 4, 6, 10 and 12, respectively, Bright further teaches a computer-readable medium encoded with a computer program product for performing the method as now claimed in claims 4, 6, 10 and 12 (columns 11-12, lines 67-8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bright as applied to claims 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31 and 34 above, and further in view of Mori et al. U.S. Patent No. 6704018.

Regarding claim 37, the rationale for claim 1 is incorporated herein, Bright, as modified above, teaches the method of claim 1 but does not specifically teach wherein each corner of each triangular area is a pixel of the image.

Mori et al. teaches this limitation (Figs. 5, 6(A-D), 8 and 9; column 4, lines 7-12, 23-28 and 48-53; column 7, lines 9-27; column 8, lines 53-65; column 9, lines 6-11; columns 11-12, lines 61-5; column 12, lines 14-40, i.e. a mesh is formed by dividing a large square polygon into one or more smaller square subpolygons/tiles wherein the number of vertices is $(2n) + 1$ and the vertices of the subpolygons match the pixels, further dividing the subpolygons into triangles defined by the vertices indicates that each corner of each triangular area is a vertex/pixel as claimed).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Bright to include the teachings of Mori et al. thereby allowing the vertex processor to read pixel data on the picture display frame buffer in the frame memory in order to process the pixel data and triangle

data to be output to the rendering processor and frame memory access unit for display thus reducing the amount of processing required by the rendering processor and increasing the rendering speed (Mori et al.: columns 11-12, lines 61-5; column 13, lines 24-33 and 41-64; column 17, lines 35-61).

Regarding claims 38-40, claims 38-40 recite the limitations of claim 37 and claims 4, 7 and 10, respectively, and therefore the rationale for the rejection of claims 37 and 4, 7 and 10 are incorporated herein.

Regarding claims 41-44, claims 41-44 recite the limitations of claim 37 and claims 13, 16, 19 and 22, respectively, and therefore the rationale for the rejection of claims 37 and 13, 16, 19 and 22 are incorporated herein.

Regarding claims 45-48, claims 45-48 recite the limitations of claim 37 and claims 25, 28, 31 and 34, respectively, and therefore the rationale for the rejection of claims 37 and 25, 28, 31 and 34 are incorporated herein.

Response to Arguments

Applicant's arguments filed 4/20/2007 have been fully considered but they are not persuasive.

Applicant argues that Bright teaches 400x400 and 200x200 side lengths of square areas (col. 10, lines 28-37) and therefore does not teach a square area side length of $(2^n)+1$.

Examiner respectfully submits that the teaching in Bright of square areas having side lengths of 400x400 and 200x200 is merely an example for a particular image

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having a particular size of 600x400 pixels. Bright teaches that an image is divided into one or more square areas without limiting the size of the square areas to a specific size (see column 4, lines 42-54) and thus is broad enough to include dividing an image into one or more square areas of arbitrary sizes including square areas having a length of $(2^n)+1$ pixels.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberta Prendergast whose telephone number is (571) 272-7647. The examiner can normally be reached on M-F 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RP 7/18/2007


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER